

**REMARKS**

Claims 1-13, 24-29, 51 and 52 are currently pending, with claims 14-20, 23 and 30-51 having been previously withdrawn. By this Response, claim 13 has been amended to correct the dependency of the claim, and claims 51 and 52 are new. FIG. 2a has also been amended to correct for a typographical error. The allowance of claims 1-11 and 24-29 is hereby acknowledged.

Claims 12 and 13 have been rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter of the invention. Applicants traverse this rejection and respectfully assert that the rejected claims are not indefinite.

With specific regard to claim 12, the Examiner has indicated that the phrase “providing a quadrature modulated optical data signal” is undefined and that it is unclear how such a data signal is generated. Applicants point out, however, that the specification provides clear and distinct examples of how a quadrature modulated optical data signal may be generated. In particular, FIG. 1 shows quadrature data modulators QMZ2 and QMZ3, wherein data modulator QMZ3 “imprints two individual 10 Gb/s data streams in quadrature (in orthogonal phase relationship) CH.1 and CH.2 onto each of the pairs of side carriers” and data modulator QMZ3 “imprints individual 10 Gb/s data streams CH.3 and CH.4 onto each of the pairs of side carriers”. Spec. par. [0038]. Moreover, FIGs. 2b and 2c show the spectra of the quadrature modulated optical data signals output from the data modules QMZ3 and QMZ2, respectively. Thus, in the illustrated example, each quadrature modulated optical data signal can include two data bands separated in frequency, wherein each data band has in-phase and quadrature components. Applicants assert that providing such quadrature modulated optical data signals is particularly pointed out and distinctly claimed in the present application. For at least the above reasons, claims 12 and 13 are not indefinite. Accordingly, Applicants request that the Examiner withdraw the instant rejection.

Claims 12 and 13 have been further rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,222,103 to Gross. Applicants traverse this rejection and respectfully assert that Gross fails to disclose all of the claimed limitations.

With specific regard to claim 12, Gross does not provide for decreasing transmitted power to zero at approximately a mid point of **each of the transitional states** of a quadrature modulated optical data signal as claimed. Rather, Gross merely discloses a solution that may result in zero transmitted power on a **subset of the transitional states** of the modulated optical data signal, but not on all of the transitional states. In particular, Gross provides a phase plot in FIG. 2(a) in which the QPSK constellation swings through the zero output only upon a state transition from (0,1) to (1,0), (1,0) to (0,1), (0,0) to (1,1) and (1,1) to (0,0). Gross demonstrates no appreciation for, and discloses no mechanism for, obtaining zero power on the remaining transitional states such as for instance (0,0) to (1,0) or (1,1) to (1,0). Compare, for example, the solution of Gross, which modulates data streams  $d_0$  and  $d_1$  onto a subcarrier of a *single* frequency  $f_m$  24 (Goss FIG. 1), with the solution described in the present application, which modulates data streams onto *two* side carriers, with one side carrier in the pair a clock rate away from the other (Spec. par. [0039]). The result is that the data signals are spread onto the two side carriers in each channel, and in effect, are spread out by fifty percent in the frequency domain. This spreading is equivalent to multiplication by a sine wave at half the data rate, and results in each data symbol returning to zero between transitions (referred to as quadrature-return-to-zero (QRZ)) and the constellation shown in FIG. 3 of the present application. For at least the above reasons, claim 12 is patentable over Gross. Claim 13 depends from claim 12, and therefore also recites patentable subject matter. Accordingly, Applicants request that the Examiner withdraw the instant rejection.

Claims 12 and 13 have also have been rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,459,521 to Bakker *et al.* Applicants traverse this rejection and respectfully assert that Bakker fails to disclose all of the claimed limitations.

With specific regard to claim 12, Bakker does not provide for decreasing transmitted power to zero at approximately a mid point of **each of the transitional states** of a quadrature modulated optical data signal as claimed. Rather, Bakker merely discloses a solution similar to Gross that may result in zero transmitted power on a **subset of the transitional states** of the modulated optical data signal, but not on all of the transitional states. In particular, Bakker provides a phase plot in FIG. 2C in which the QPSK constellation swings through the zero output only upon a state transition from (0,1) to (1,0), (1,0) to (0,1), (0,0) to (1,1) and (1,1) to (0,0). Gross demonstrates no appreciation for, and discloses no mechanism for, obtaining zero power on the remaining transitional states. For at least the above reasons, claim 12 is

patentable over Bakker. Claim 13 depends from claim 12, and therefore also recites patentable subject matter. Accordingly, Applicants request that the Examiner withdraw the instant rejection.

**CONCLUSION**

Applicants assert that all claims pending in the present application are in condition for allowance and respectfully request that the Examiner pass this case to issuance at the Examiner's earliest convenience.

The Examiner is invited to contact the undersigned at (202) 220-4200 to discuss any matter concerning this application.

Applicants are also submitting herewith a request for a three (3) month extension of time and hereby authorize payment of the appropriate fees under 37 CFR §§ 1.16 or 1.17 and crediting any overpayment to Deposit Account No. 11-0600.

Respectfully submitted,

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